ESIS POWER

USER MANUAL

EGE Series UPS 1-3KVA

High Frequency Online UPS

Uninterruptible Power Supply

TABLE OF CONTENTS

1. Safety Instructions
- 1.1 Transport
- 1.2 Set-Up
- 1.3 Installation
- 1.4 Operation
- 1.5 Maintenance, Servicing and Faults

2. Commonly Used Symbols

3. Introduction

4. Panel Description

5. Connection and Operation
- 5.1 Inspection
- 5.2 Connection
- 5.3 Battery Charging
- 5.4 Turning On the UPS
- 5.5 Test Function
- 5.6 Turning Off the UPS

6. UPS Operating Modes
- 6.1 Line Mode of Operation
- 6.2 Battery Mode of Operation
- 6.3 Bypass Mode of Operation
- 6.4 No-Output Mode of Operation
- 6.5 Abnormal Mode of Operation

7. Setting the UPS Parameters

8. Troubleshooting

9. Maintenance
- 9.1 Operation
- 9.2 Storage

10. Technical Specifications
- 10.1 Electrical Specifications
- 10.2 Operating Environment
- 10.3 Typical Battery Backup Times
- 10.4 Dimensions and Weights
- 10.5 Safety and EMC Standards

11. Communication Port
- 11.1 RS232 Interface
- 11.2 AS400 Interface (optional)

12. Software For All Models

Appendix 1 - **UPS Rear Panel**

1. Safety Instructions

Please read the following user manual and safety instructions before installing this unit and starting it up.

1.1 Transport

★ Please transport the UPS system in its original packing carton (to protect it against damage due to shock and impact).

1.2 Set-up

★ As condensation may occur if the UPS is moved directly from cold to warm environment, and in order to dry the UPS before installation, please allow acclimatization time of at least two hours.

★ Do not install the UPS system near water sources or in dump environment.

★ Do not install the UPS where it could be exposed to direct sunlight or near heat.

★ Do not block off the ventilation openings of the UPS cabinet.

1.3 Installation

★ Do not connect appliances or items of equipment, which may overload the UPS (such as laser printers), to the output of the UPS.

★ Place the cables in such a way that no one can step on or trip over them.

★ Do not connect home appliances, such as hair-dryers, to the output of the UPS.

★ This UPS can be operated by any individual with no previous experience**.**

★ Connect the UPS only to an earthed shock-proof socket outlet.

★ The socket outlet, to which the UPS is connected, must be easily accessible and close to the UPS.

★ Use only VDE-tested, CE-marked cable (as the power cable of your computer) to connect the UPS to the building socket outlet.

★ Use only VDE-tested, CE-marked power cables to connect the loads to the UPS.

★ This UPS is an operator installable.

★ When installing the equipment, it should be ensured that the sum of the earth leakage current from the UPS and the load connected to it must not exceed 3.5mA

1.4 Operation

★ Do not remove or unplug the input cord when the UPS is turned on. This removes the safety ground from the UPS and the equipment connected to the UPS.

★ This UPS contains its own energy source (batteries). The output of the UPS may carry live voltage even when the UPS is not connected to an AC supply.

★ For complete disconnection of the UPS system first press the "OFF" button for more than one second, then disconnect the mains power supply cable.

★ Ensure that no fluids or other foreign objects can enter the UPS system.

★ This UPS operates with hazardous voltages, repairs must be carried out only by qualified service technician.

1.5 Maintenance, servicing and faults

★ This UPS operates with hazardous voltages, repairs must be carried out only by qualified maintenance technician.

★ Caution – risk of electric shock. Even after the UPS has been disconnected from the mains supply (building socket outlet), dangerous high voltages are still existing inside the UPS.

★ Before carrying out any type of servicing and repair, disconnect the mains supply and the batteries. Verify that no hazardous voltage exists on the terminals of the capacitors.

★ Only persons, adequately familiar with batteries and with the required precautionary measures my replace the UPS batteries, unqualified persons must not deal with batteries.

★ Caution – risk of electric shock. The battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground. Before touching any terminal or wire, please verify that no voltage is present.

★ Batteries can present a risk of electrical shock and have high short-circuit current. The following precautions, and any others necessary measures, should be observed:

- Remove watches, rings, or other metal objects.
- Use tools with insulated handles.

★ Replace the batteries with the same number and type, as the originally installed ones.

★ Do not dispose of the batteries in a fire. Batteries may explode.

★ Do not open or destroy the battery. Released electrolyte is harmful to skin and eyes. It may be toxic.

★ When replacing a fuse, use only one of the same type and the same current and voltage ratings, as the original fuse.

★ Do not dismantle the UPS system.

2. Commonly Used Symbols

The following are the symbols used in this manual, or on the UPS system, to alert you to important information. Users should be familiar with these symbols and understand their meanings.

Symbol	Explanation
	Caution – Special Attention is Required.
	Risk of Electric Shock.
	Turning ON the UPS.
	Turning OFF the UPS.
	Idle or Shutdown.
	Alternating Current (AC).
	DC Current (DC).
	Protective Ground.
	Alarm Silence.
	Overload Indication.
	Battery Check.
	Recycle.
	Keep UPS in a Clean Area.

3. Introduction

This on-line UPS incorporates the latest in double-conversion topology, which provides perfect protection for your critical and power supply sensitive equipment specially Novell, Windows NT and Unix servers.
The double-conversion principle eliminates all the mains power disturbances. Here, a rectifier converts the alternating current of the mains supply to direct current. This direct current charges the batteries and powers the inverter. The inverter, in its turn, generates a sinusoidal AC voltage, which permanently supplies the loads with uninterrupted, clean and sine-wave voltage. Computers and peripherals are thus powered entirely by the inverter. In the event of mains power failure, the maintenance-free batteries supply the inverter.

This series of UPS units are produced in three power ratings 1kVA, 2kVA and 3kVA with standard battery backup time and with extended battery backup time, as shown in the table below.

UPS Model	Type	UPS Model	Type
EGE-101KT	Standard battery backup time	EGE-101KTL	Extended battery backup time
EGE-102KT		EGE-102KTL	
EGE-103KT		EGE-103KTL	

“L” denotes models with extended battery backup times

4. Panel Description

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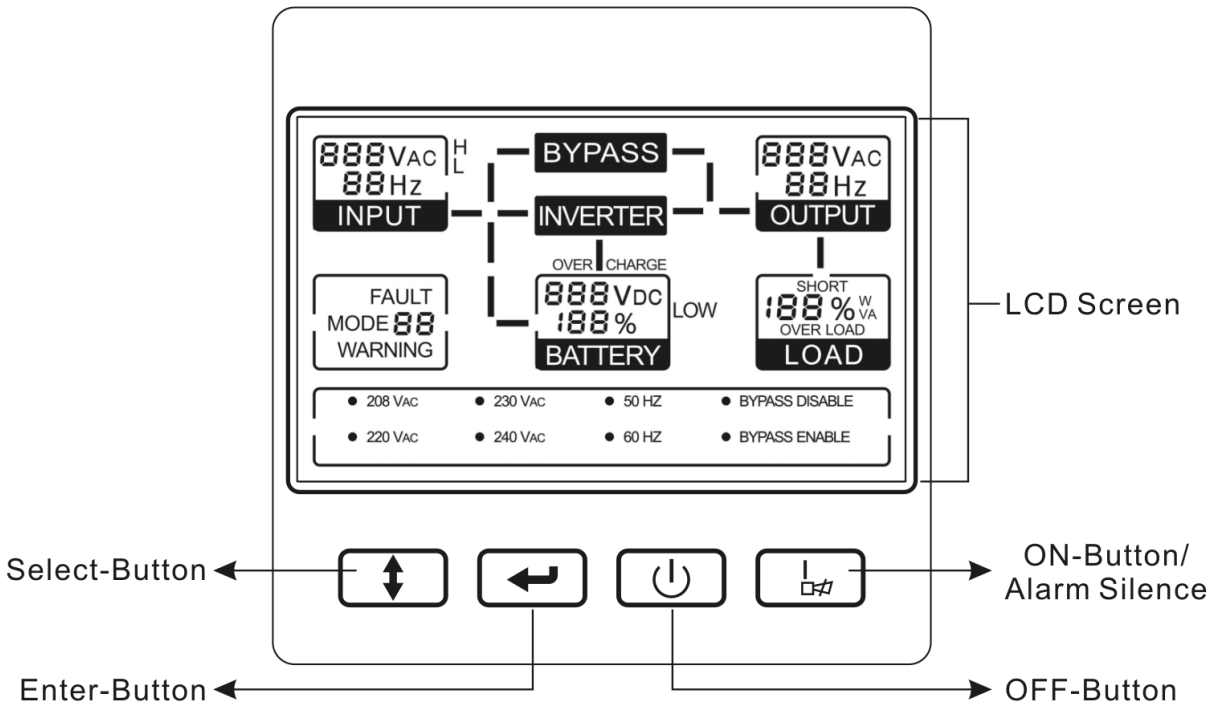


Fig. 4.1: Front panel of the UPS

The following table describes the function of the button switches of the front panel.

Switch	Function
ON-Button/ Alarm Silence	This button has two functions: - Turning on the UPS system: By pressing this button, the UPS system turns on. - Deactivating the audible alarm: By pressing this button the audible alarm can be deactivated.
OFF-Button	By pressing the "OFF" button “⏻“, the inverter turns off and, if the mains power supply is normal, the UPS system switches to Standby or Bypass mode. The UPS output sockets will be supplied via the bypass circuit.
Select-Button	If the UPS is in the Bypass or in the No-output mode, this button is used to enter the configuration mode and to select the UPS output voltage and frequency and to disable or enable the bypass circuit.
Enter-Button	If the UPS is in the Bypass or in the No-output mode, this button is used to confirm the selected UPS output voltage and frequency and the disabling/enabling state of the bypass circuit.

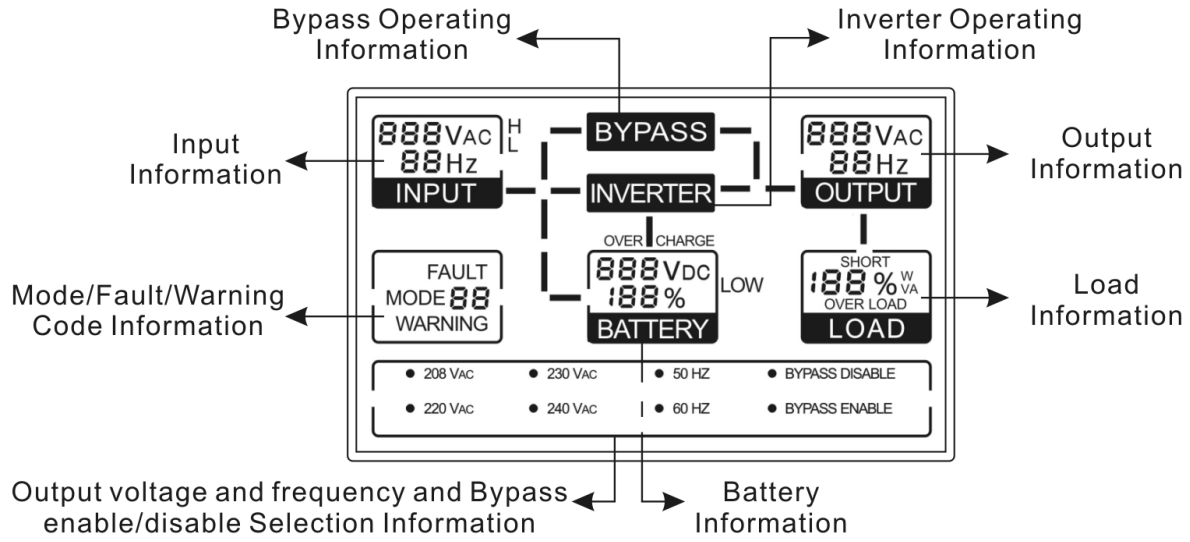


Fig. 4.2: Front panel LCD of the UPS

Display	Information or Data
Input Information	
888 VAC	Displays the value of the input supply voltage. It can be displayed from 0 to 999Vac.
88 Hz	Displays the value of the frequency of the input supply. It can be displayed from 0 to 99Hz.
H	Indicates that the input supply voltage is higher than the specified range, the UPS will work in the battery mode.
L	Indicates that the input supply voltage is lower than the specified range, the UPS will work in the battery mode.
Output Information	
888 VAC	Displays the value of the UPS output voltage. It can be displayed from 0 to 999Vac.
88 Hz	Displays the value of the frequency of the UPS output. It can be displayed from 0 to 99Hz.
Load Information	
188 % W VA	Displays the load in Watt or VA as a percent of the UPS output power rating. Only the maximum of these two readings is displayed from 0 to 199%.

SHORT	Indicates that the load or the UPS output is short-circuited and the UPS will shutdown.
OVER LOAD	Indicates that the load is higher than the UPS output power rating.
Battery Information	
888 VDC	Displays the value of the battery voltage. It can be displayed from 0 to 999Vdc.
188 %	Displays the battery stored capacitance in percent. It can be displayed from 0 to 199%.
OVER CHARGE	Indicates that the battery is over charged, the UPS will be switched to battery mode.
LOW	Indicates that the battery voltage is low, the UPS will shutdown soon.
Mode/Fault/Warning code Information	
FAULT MODE 88 WARNING	Displays the operating mode, the fault code and the warning codes of the UPS. For the meaning of these codes refer to page 13.
Inverter operating Information	
INVERTER	Indicates that the inverter is running.
Bypass operating Information	
BYPASS	Indicates that the bypass circuit is running.
Output voltage and frequency and Bypass disable/enable selection Information	
208 VAC 230 VAC 220 VAC 240 VAC	Indicates the value of the desired UPS output voltage. One of these four values can be selected when the UPS is in the No-output or in the Bypass mode.
50 HZ 60 HZ	Indicates the value of the desired UPS output frequency. One of these two values can be selected when the UPS is in the No-output or in the Bypass mode.
BYPASS DISABLE BYPASS ENABLE	Indicates if the Bypass circuit is going to be disabled or enabled. One of these two states can be selected when the UPS is in the No-output or in the Bypass mode.

5. Connection and Operation

This UPS system has to be wired and installed by a qualified technician and in accordance with the applicable safety regulations.

When installing the electrical wiring of the UPS, please take into consideration the rated current-carrying capacity (ampacity) of the incoming feeder.

5.1 Inspection: Inspect the packing carton and its contents for any damage. Inform the carrier agency immediately if you find any sign of damage. Keep the packing cartons in a safe place for future use.

Note: Please ensure that the incoming feeder is isolated and secured to prevent it from being switched on again.

5.2 Connection

5.2.1 UPS Input Connection

The current carrying capacity (ampacity) of the socket outlet, to which the UPS is connected, must be greater than the UPS input current: over 10A for 1KT, 1KT-XLand 2KT models and over 16A for 2KT-XL, 3KT and 3KT-XL models.

5.2.2 UPS Output Connection

The outputs of the UPS EGE-101KT(L);EGE-102KT(L);EGE-103KT(L) are socket type only. Simply plug the load power cord to the UPS output socke to complete the connection.

UPS Model	Number of Socket Outlets	Output Terminal Block
EGE-101KT(L)	2	No
EGE-102KT(L)	2	No
EGE-103KT(L)	3	No

Caution!
* Do not connect equipment (such as printers), which may overload the UPS system.

5.3 Battery Charging

To fully charge the batteries of the UPS, keep the UPS connected to the mains supply for 1-2 hours. During this period, the UPS can be used to supply the load, but in this case the battery autonomy time will be less than the values specified.

5.4 Turning On the UPS

5.4.1 With Mains Power Connected

Press the "ON" button "I" continuously for more than one second, to turn on the UPS. At the beginning of the turning-on process the UPS performs a self-test. After finishing the self-test, the inverter starts and the UPS becomes in the line-mode. The LCD screen lights up to indicate the status of the UPS.

5.4.2 Without Mains Power Connected

Even the mains power supply is not connected, pressing the "ON" button "I" continuously, for more than one second, will turn on the UPS. At the beginning of the turning-on process the UPS performs a self-test. After finishing the self-test the inverter starts and the UPS becomes in the battery-mode. The LCD screen lights up and indicates the status of the UPS.

Note: The default setting for the bypass circuit is the no-output state. This state can be configured using the front panel button switches or software.

5.5 Test Function

To test the UPS press the "ON" button "I" of the UPS or disconnect the input mains supply.

5.6 Turning Off the UPS

5.6.1 In Line Mode

Press the "OFF" button "⏻" continuously for more than one second. At the beginning, the UPS performs a self-test. After finishing the self-test, the UPS becomes in the standby or the bypass-mode. A voltage may exist at the output of the UPS if the bypass is enabled. Disconnect the mains power to remove the UPS output voltage.

5.6.2 In Battery Mode

To turn off the UPS, press the "OFF" button "⏻" continuously for more than one second. At the beginning of the turning-off process the UPS performs

5.6.2 In Battery Mode

To turn off the UPS, press the "OFF" button "⏻" continuously for more than one second. At the beginning of the turning-off process the UPS performs a self-test. After the self-test is finished the UPS turns off completely.

5.7 Audible Alarm mute

If the alarm is activating in the battery mode, press the "ON" button "I" continuously, for more than one second, to clear it. The alarm will be activated again when the battery voltage becomes low to remind you to shutdown the load.

5.8 Procedure of external battery connection for long backup time models ("S" models).

- **Units with CE marks**

1) Use the battery pack of 36VDC (3 cells of 12V each) for the 101KTL models Use the battery pack of 96VDC (8 cells of 12V each) for the 102KTL and 103KTL models. Connection of battery packs with wrong battery voltages will cause damage.
2) One end of the external battery cable will be plugged into the external battery socket of the UPS and the other end will be connected to the external battery cabinet.
3) Do not connect any load to the UPS output. Connect the input power cable of the UPS to the input mains supply to operate the UPS in the utility power mode.
4) Connect the external battery cable between the external battery socket, on the rear panel of the UPS, and the external battery cabinet. The UPS will start charging the external battery.
5) This external battery cable has three wires, the red is the "+" wire, the black is the "-" wire and the green/yellow is the grounding wire.

Caution!
The output sockets of the UPS system may carry live voltage even if the input power supply has been disconnected or the bypass switch is on “OFF” position.

6. UPS Operating Modes

On the LCD panel of the UPS, a code is displayed to indicate the operating mode of the UPS. The codes displayed can also indicate a fault or a warning. The table below shows the meanings of the different codes that can be displayed on the UPS LCD.

Note that, at any time instant, only one operating mode or a fault mode can be represented.

If several warnings exist in a given operating mode, the codes of these warnings and the code that indicates the operating mode are shown cyclically.

Once a fault comes forth, the codes of all existing warnings will not be displayed and only the code of the existing fault will be displayed.

Operating mode	code	Operating mode	code
No-output mode	00	Overload fault	07
Bypass mode	01	Over temperature fault	08
Line mode	02	Site fail warning	09
Battery mode	03	Fan fail warning	10
Battery test mode	04	Battery over-charge warning	11
Bus fault	05	Battery weak warning	12
Inverter fault	06	Charger fail warning	13

6.1 Line Mode of Operation

The LCD display of the UPS in the line mode of operation is shown in the following figure. In this mode of operation, information about the input mains supply, the battery, the UPS output and the load are displayed. The block "INVERTER" on the LCD display indicates that the inverter is in operation.

Note that the code that indicates this mode of operation is "02".

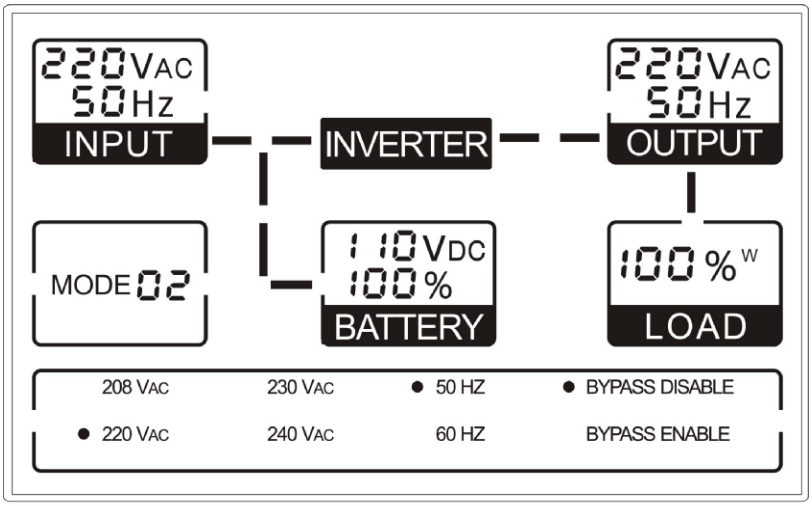


Fig. 6.1: Line mode of operation

If the UPS becomes overloaded, the percentage of the load will be shown and the audible alarm will beep twice per second. In this case, the UPS load has to be decreased to less than 90% of its rated power capacity.

6.2 Battery Mode of Operation

The LCD display of the UPS in the battery mode of operation is shown in the figure below. In this mode of operation, information about the input mains supply, the battery, the UPS output and the load are displayed. The block "INVERTER" on the LCD display indicates that the inverter is in operation.

Note that:

1) When the UPS is in the battery mode, the alarm beeps once every 4 seconds. To silence the alarm, press the "ON" button for more than one second. Pressing the "ON" button again for more than one second resumes the alarm again.

2) If the mains input supply voltage becomes higher than the maximum input voltage accepted by the UPS, the "H" sign will be shown on the LCD, while if the mains input supply voltage becomes lower than the minimum input voltage accepted by the UPS, the "L" sign will be shown on the LCD.

   If the input mains supply is lost, both "H" and "L" signs will disappear and the input voltage and frequency will display zeros.

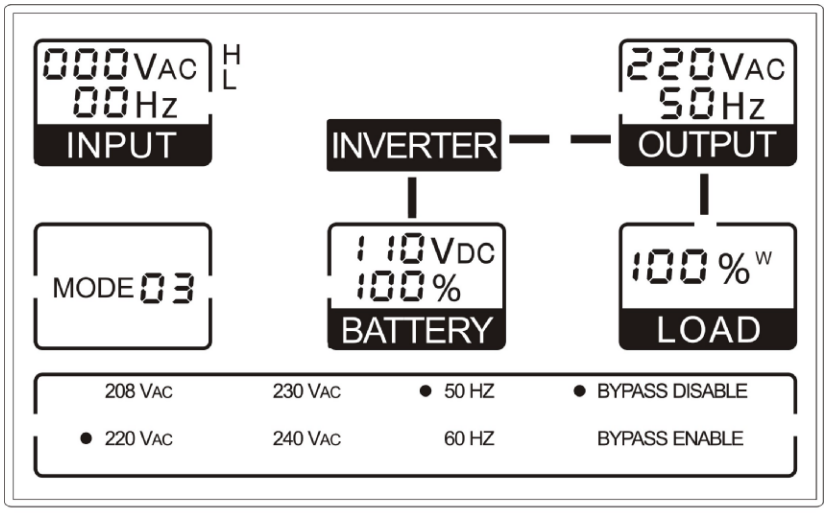


Fig. 6.2: Battery mode of operation

The display of battery test mode is the same as battery mode, but “H” and “L” signs will not be shown unless the input mains voltage is higher or lower than the values accepted by the UPS.

The code that indicates the battery mode of operation is "03" while the code that indicates the battery test mode is "04".

6.3 Bypass Mode of Operation

The LCD display of the UPS in the bypass mode of operation is shown in the figure below. In this mode of operation, information about the input mains supply, the battery, the UPS output and the load are displayed. The code that indicates this mode of operation is "01". The block "BYPASS" on the LCD display indicates that the bypass circuit is in operation. The UPS alarm beeps once every two minutes.

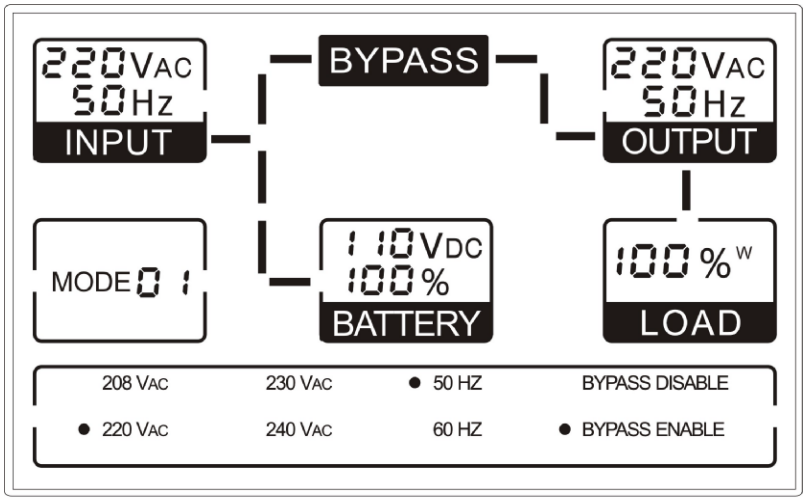


Fig. 6.3: Bypass mode of operation

Note that in the bypass mode the load is supplied directly from the input mains supply and no backup exists in case of mains failure.

6.4 No-Output Mode of Operation

The LCD display of the UPS in the no-output mode of operation is shown in the figure below. In this mode of operation, information about the input mains supply, the battery, the UPS output and the load are displayed. The code that indicates this mode of operation is "00".

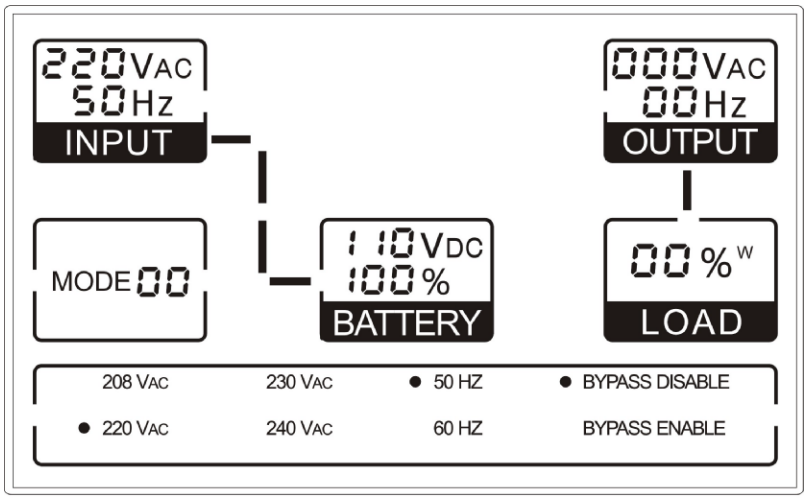


Fig. 6.4: No-output mode of operation

6.5 Abnormal Mode of Operation

This mode of operation occurs if a fault occurs. A code will be displayed to indicate the type of the fault occurring. In addition to the code that describes the type of the fault, some warning words, as "short" that indicates an output short-circuit, will be displayed. Refer to chapter 4, to determine the meaning of the warning words.

7. Setting The UPS Parameters

The front panel button switches are used to set the UPS output voltage and frequency and to disable or enable the bypass circuit. The UPS output voltage can be set to 208VAC, 220VAC, 230VAC or 240VAC. The UPS output frequency can be set to 50Hz. or 60Hz. The UPS bypass circuit can be set to enable or disable state.

Note that these parameters can be set only when the UPS is in the bypass or in the no-output mode.

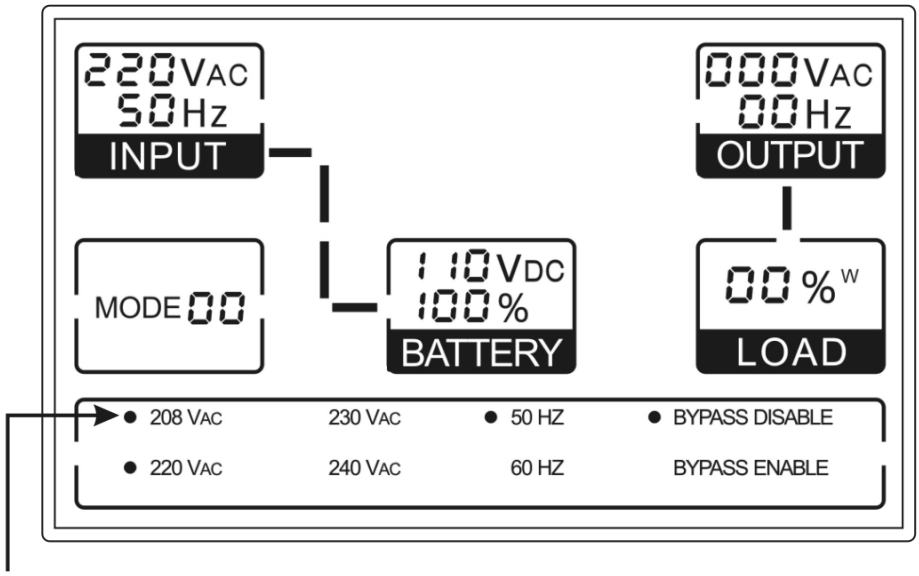
While the UPS is in the bypass or in the no-output mode, if the "Select" button is pressed for more than one second, a flickering black round dot will be shown in front of the "208V" on the LCD. If the "Select" button is again pressed continuously, the flickering dot will move to the front of the "220V", "230V", "240V", "50Hz", "60Hz", "Bypass Disable" and "Bypass Enable" cyclically.

To select any of these possible choices, press the "Enter" button for more than one second.

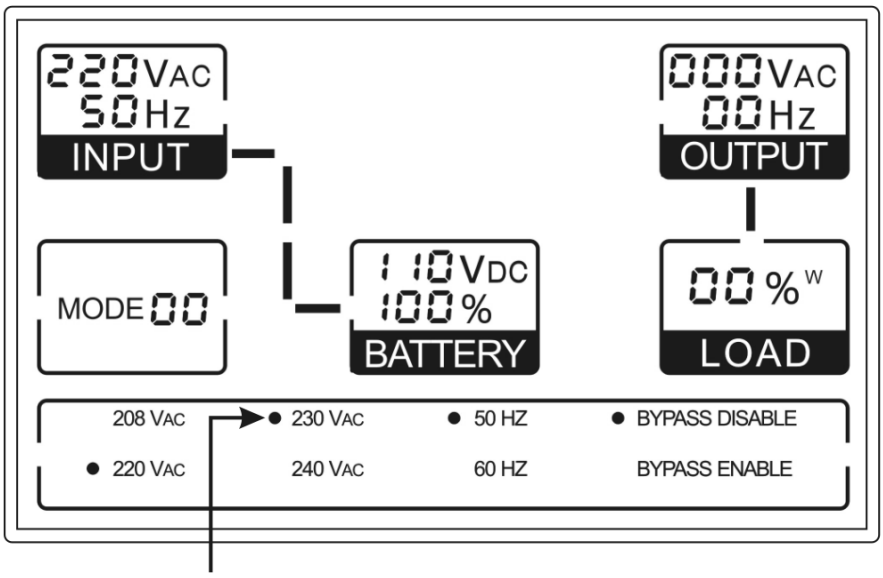
The output voltage and frequency of the UPS will be changed to the selected value after the UPS is turned on, by pressing the "ON" button.

If the "Bypass Enable" was selected, The UPS will turn to bypass mode, in several seconds. While if "Bypass Disable" was selected, the UPS will turn to "No Output" mode.

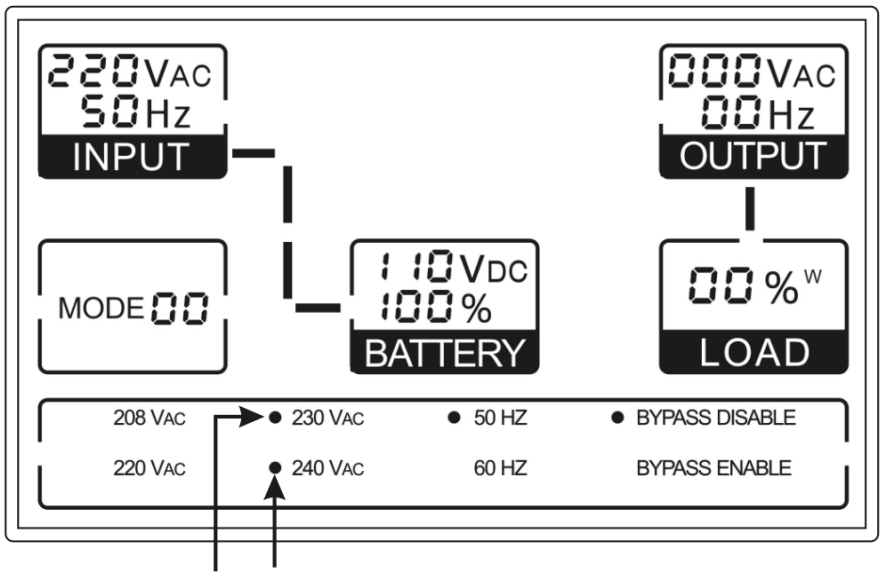
The following figures show the steps required to change the UPS output voltage from 220V to 230V.



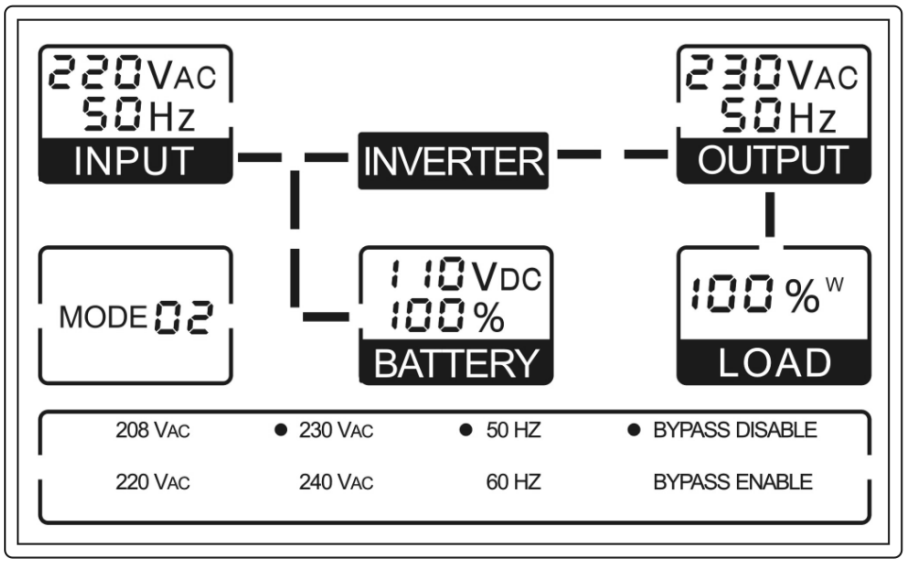
Step 1. After pressing the “Select” button, for more than one second, one flicking round dot will appear in front of the “208Vac”.



Step 2. Pressing the “Select” button twice again, the flicking round dot will move to the front of the “230Vac”



Step 3. Pressing the “Enter” button, the dot in front of the 230Vac will stop flicking, and the dot in front of the 240Vac will begin flicking. This indicates that the output voltage 230Vac has been selected.



Step 4. After the UPS turns to “ON”, the output voltage will be 230Vac.

8. Troubleshooting

If the UPS alarm is activated, use the following table to determine and resolve the problem.

Problem	Possible Cause	Action
Even the UPS is connected to the mains power supply, there are no warning tones and no indications are shown on the LCD panel.	No input supply voltage.	Check building wiring socket outlet and the UPS input cable.
Warning code 09 is shown on the LCD panel.	Phase and neutral conductors of the UPS input are reversed	Rotate mains power socket by 180°.
Mode code 03 is shown on the LCD panel, and the warning word “H” or “L” may be also displayed	Input power supply voltage and/or frequency is out of tolerance	Check the input power supply source and inform the service representative, if necessary.
Even the mains power supply is available, mode code 00 or 01 is shown on the LCD panel.	Inverter is not switched on.	Press the "ON" switch.
Mode code 03 is shown on the LCD panel, the alarm beeps 1 beep every 4 seconds.	Mains power supply failure	The UPS is in the battery mode. When audible alarm beeps once per second the battery is almost empty.
Fault code 07 is shown on the LCD panel, the alarm beeps once per second.	Overload	Remove some of the loads from the UPS output and restart.

Fault code 05 or 06 or 08 is shown on the LCD panel, the alarm beeps continuously.	UPS fault	Contact the service representative.
Battery backup time is shorter than nominal value.	Battery not fully charged or battery faulty.	Charge the battery for at least 1 - 2 hours and then check battery backup time. Contact the service representative.
Warning code 13 is shown on the LCD panel, the alarm beeps once per second.	Charger or Battery faulty	Contact the service representative.
Warning code 10 is shown on the LCD panel	Fan is locked or not working.	Check fan(s) and contact the service representative.

Please have the following information ready when you call the after-Sales Service Department:

- Model number and serial number
- Date of failure or problem
- Symptoms of failure or problem

9. Maintenance

9.1 Operation

Please note that this UPS has no user-serviceable parts inside. If the battery service life (3 to 5 years at 25°C ambient temperature) has been exceeded, the batteries have to be replaced. For battery replacement, contact your dealer.

9.2 Storage

If the UPS is stored in a temperate climatic environment, recharge the battery every three months by connecting the UPS to the mains power supply for a period of one to two hours. You should shorten the charging intervals to two months at locations subject to high temperatures.

10. Technical Specifications

10.1 Electrical specifications

Electrical input

Mode No.	EGE-101KTL	EGE-102KT	EGE-102KTL	EGE-103KTL
Phase	Single			
Frequency	(46~54)/(56~64) Hz			
Current(A)	7A	9A	12A	16A

Electrical output

Model No.	EGE-101KTL	EGE-102KTL	EGE-103KTL
Power rating	1kVA/0.7kW	2kVA/1.4kW	3kVA/2.1kW
Voltage	208/220/230/240 (±2%) VAC		
Frequency	50/60 (±0.2) Hz (Battery mode)		
Waveform	sinusoidal		

Note: The output power of the UPS is de-rated to 90% of its nominal value, when the output voltage of the UPS is adjusted to 208V.

Batteries

Model No.	101KT	102KT	103KT
Number and type	3×12V×7.2Ah	8×12V×7.2Ah	8×12V×7.2Ah

10.2 Operating Environment

Operating Temperature	0°C to 40°C
Operating humidity	< 95%
Operating Altitude	< 1000m
Storage temperature	0°C ~ 40°C

10.3 Typical Battery Backup Times (at 25°C, in minutes)

Model No.	100 % Load	50 % Load
EGE-101KT	5	14
EGE-102KT	9	21
EGE-103KT	5	15

10.4 Dimensions and Weights

Model No.	Dimensions W x D x H (mm)	Net Weight kg
EGE-101KT	145X400X220	14
EGE-101KTL	145X400X220	7
EGE-102KT	192X460X340	34.5
EGE-102KTL	192X460X340	15
EGE-103KT	192X460X340	35.5
EGE-103KTL	192X460X340	16

10.5 Safety and EMC Standards

GB4943/EN62040-1-1 (safety)

Conducted Emission: GB7260.2/EN62040-2..... Class B

Radiated Emission: GB7260.2/EN62040-2..... Class B

Harmonic Current: EN61000-3-2

Voltage Fluctuations and Flicker: EN61000-3-3

EMS: EN61000-4-2 (ESD)..... Level 4

EN61000-4-3 (RS) ..... Level 3

EN61000-4-4 (EFT) ..... Level 4

EN61000-4-5 (Surge) ..... Level 4

EN61000-2-2 (Immunity to low frequency signals)

11. Communication Port

11.1 RS232 Interface

The following is the pin assignment and the description of DB-9 connector at the rear of the UPS.

Pin #	Description	I/O
2	TXD	Output
3	RXD	Input
5	GND	Input

11.2 AS400 Interface (Optional)

In addition to the communication protocol, mentioned above, this UPS series has AS400 card (an optional accessory) for AS400 communication protocol. This interface provides true relay contact output to peripheral devices. The following is the pin assignment and description of DB-9 connector in AS400 card.

Pin #	Description	I/O	Pin #	Description	I/O
1	UPS Fail	Output	6	Bypass	Output
2	Summary Alarm	Output	7	Battery Low	Output
3	GND	Input	8	UPS ON	Output
4	Remote Shutdown	Input	9	Line Loss	Output
5	Common	Input			

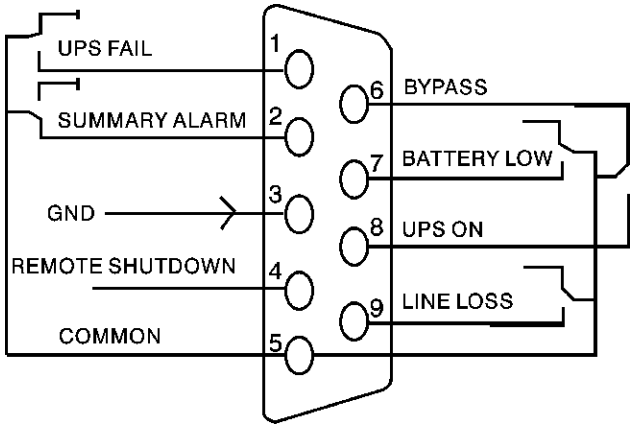


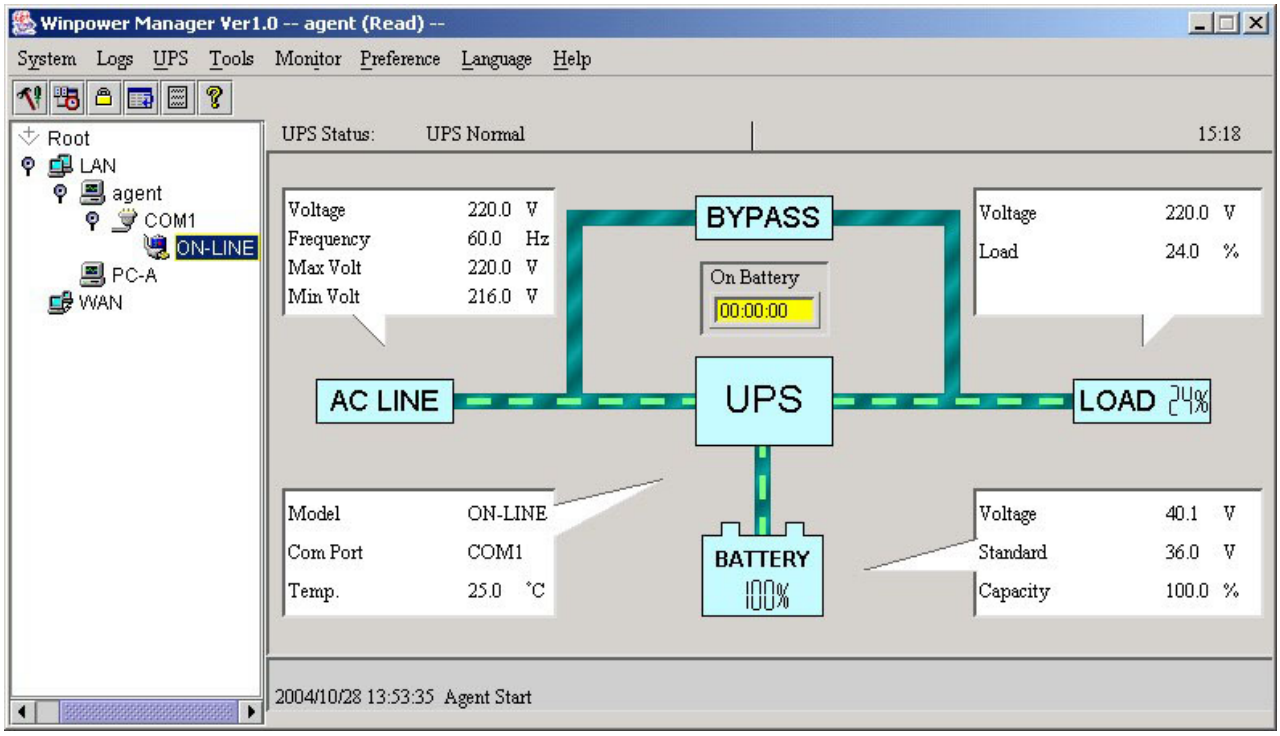
Fig. 10.1: Pin assignment of the DB-9 interface of AS400 Protocol

Please contact your local distributor for details.

12. Software For All Models

The Free-downloaded Software-WinPower.

WinPower is a brand new UPS monitoring software, which provides a user-friendly interface to monitor and control your UPS. This unique software provides safely auto shutdown for multi-computer systems in case of power failure. With this software, you can monitor and control any of your UPS systems on the same LAN, no matter how far are these UPS systems.



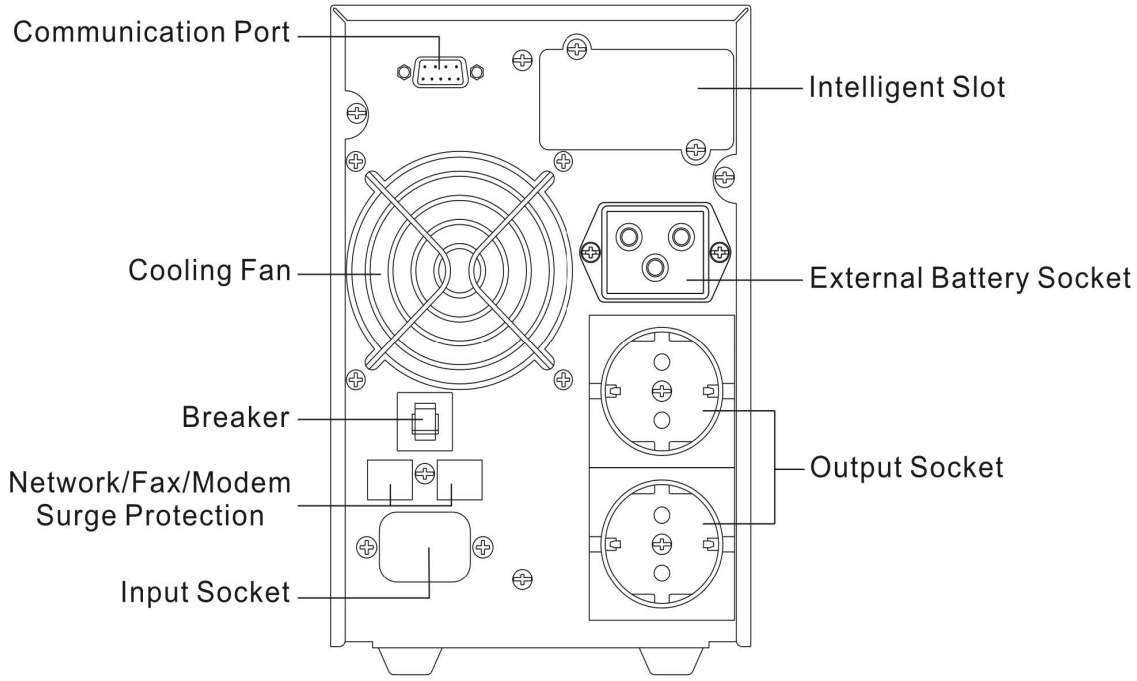
Installation Procedure:

The following is the installation procedure for the WinPower software:

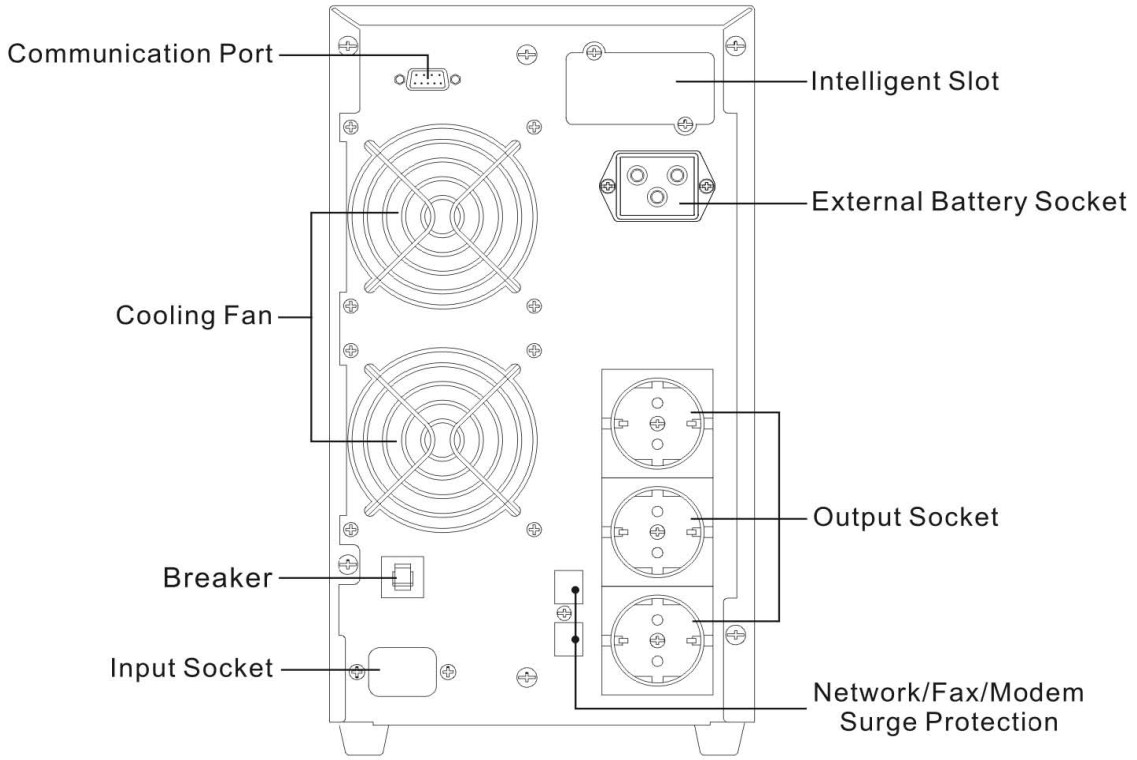
1. Connect to the website:
   http://www.ups-software-download.com/winpower.htm
2. From the different choices mentioned in this web page, select the operating system you are using and follow the instructions described on the website to download the software.
3. When downloading is finished, enter the serial number **511C1-01220-0100-478DF2A**, to install the software.

When your computer restarts, the WinPower software will appear as a green icon located in the system task manager, near the clock.

Appendix 1 - UPS Rear Panel



The rear panel of the EGE 101KT and EGE 101KTL models



The rear panel of the EGE 102KT/EGE 102KTL and EGE 103KT/EGE103KTL models

ESIS POWER

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